



### EMBRYONIC STEM CELLS

## Spotlight Shifts to Senate After Historic House Vote

Bone cell researcher Steven Teitelbaum had a brush with history last week as the U.S. House of Representatives weighed in on one of the most dramatic scientific debates in years.

Teitelbaum was on the sidelines, clarifying issues for undecided legislators during the 4-hour debate right up until the 238-to-194 vote in favor of using federal funds to conduct research on newly derived lines of human embryonic stem (ES) cells. "It was a great day," says the former president of the Federation of American Societies for Experimental Biology in Bethesda, Maryland. "This is what our country is all about; it was bipartisan," he told *Science*. The vote, he says, was not a political contest but rather "a contest between us as a society and disease."

Little in biomedical history can match the hot and heavy politicking that has surrounded the stem cell debate, which has evoked people's deepest concerns about suffering and disease, children, and the meaning of human life. President George W. Bush, who declared on 9 August 2001 that only ES cell lines developed before that date could be used in federally funded research, vowed before the vote to use his first veto if the measure passed, saying he opposed "the use of federal money, taxpayers' money, to promote science which destroys life."

Despite that threat, 50 Republicans defied their party leader and voted to allow federally

funded scientists to do research with human ES cells derived after 9 August 2001. The primary sponsors, representatives Michael Castle (R-DE) (see next page) and Diana DeGette



**Stepping up for stem cells.** Reps. Castle, DeGette (at podium), and Langevin (seated) hold a pep rally with patients the day of the House vote.

(D-CO), say they'll keep pushing to turn the bill (H.R. 810) into law. And supporters in the Senate claim to have enough votes to override a presidential veto. But first they'll need the consent of Senate Majority Leader Bill Frist (R-TN) to schedule a vote on the measure.

The day of the 24 May House vote began with crowded press conferences by both supporters and opponents of H.R. 810. The Castle team featured Teitelbaum, from Washington University in St. Louis, and John Gearhart, a stem cell researcher at Johns Hopkins University in Baltimore, Maryland. The opponents countered with 21 "snowflake" babies—the products of embryos "adopted" from fertility clinics—to suggest that even 5-day-old blastocysts are individuals.

Pat White, director of federal relations for the Association of American Universities in Washington, D.C., says pro-stem cell lobbyists conducted a slick "whip" operation before the vote. Patient lobbyists, scientists, and university federal relations people were

all over the House on the big day. "We wanted to be in position to have scientists answer any question that came up by any member during the day or during the debate," says White.

Gearhart says a number of members asked him if the frozen embryos mentioned in the bill had ever been inside a womb. Teitelbaum says he thinks his conversation with Representative Jo Ann Emerson (R-MO) may have contributed to her 11th-hour decision to support the bill. Their knowledge served as a counterweight to comments from opponents such as Representative Dave Weldon (R-FL), a physician who erroneously told his supporters before the vote that adult stem cells "have been shown to be pluripotent" and, thus, just as useful as ES cells.

The recent success by Korean scientists has moved up the likely timetable for when nuclear transfer—otherwise known as research cloning—will become a feasible research tool (*Science*, 20 May, p. 1096). Polls show steady increases in public support for human ES cell research. A broad range of patients, politicians, and scientists, including several leaders at the National Institutes of Health, have expressed increasing dissatisfaction with the president's policy as the limitations of existing cell lines—22 of which are available—have become clear.

By omitting any mention of nuclear transfer, the Castle bill managed to attract 201 co-signers, including several opponents of abortion. The measure is aimed solely at allowing federally funded researchers to have access to stem cell lines derived after the presidential cutoff date—provided they come, with proper donor permission, from fertilized eggs that would otherwise be discarded from fertility clinics. The bill would not allow federally funded researchers to actually generate new ES cell lines or to use lines from any embryos created solely for research.

Those restrictions didn't mollify opponents. "Yes, sir. You, too, were an embryo once!" Representative Mike Ferguson (R-NJ) cried rhetorically to the bill's supporters. House Majority Leader Tom DeLay (R-TX), who has been lying low recently amid accusations of ethics improprieties, delivered a fire-breathing speech saying that "we cannot use U.S. taxpayer dollars to destroy" embryos. ▶



**Bench strength.** Scientists Steven Teitelbaum and John Gearhart answered questions before and during the debate.

1398

Q&A with  
Elias Zerhouni



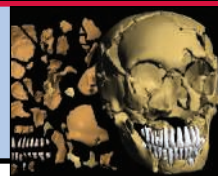
1402

Key roles for  
citizen-scientists



1404

Hominid  
reconstructors



## Moderate Republican Led the Winning Coalition

Representative Mike Castle (R-DE) has received the lion's share of the credit for getting an up-or-down vote on his bill to expand the pool of human embryonic stem cells available to federally funded researchers. A seven-term member, he's the chair of the House subcommittee on education reform and president of the Republican Main Street Partnership, a centrist group that has championed tort reform and R&D tax credits. Stem cell researcher Steven Teitelbaum of Washington University in St. Louis, Missouri, calls him "one great guy. ... He's a real person: totally unpretentious and smart as a whip."

A former governor of Delaware, the 65-year-old Castle says he got on the stem cell bandwagon half a dozen years ago because of the large number of constituents worried about health issues. He told *Science* he started reading about stem cells and "realized this was probably the greatest hope extant out there" for many of them. He says he had no illusions about the chances of success in an increasingly polarized and conservative House of Representatives. "I knew we would gear up to run hard" with it.

Republican Party leaders were in no hurry to hold a vote on H.R. 810. And proponents didn't want to rock the boat during an election year. But this spring Castle and Representative Diana DeGette (D-CO) decided to make their move. In March, Castle says he sent



**Man of the hour.** Representative Mike Castle rallied moderate Republicans behind the bill.

Speaker Dennis Hastert (R-IL) a message offering a deal, saying that "we were not interested in voting for the budget until such time as we had a date for a [stem cell] vote." After meeting with Castle's delegation, Hastert decided to schedule an up-or-down vote with no strings attached. Castle says he thinks Hastert wanted to remove the specter of the issue cropping up throughout the year in conjunction with other House bills.

Now that his hard work is starting to pay off, Castle says he plans to stick with the issue for as long as it takes. If the Senate passes the bill and the President vetoes it, "you're looking at a wasteland of 3 1/2 years," he says. "I'm not interested in that. ... [Instead] we'll do something."

Castle knows that somewhere down the road looms the question of human cloning. The previous House twice voted to outlaw all forms of cloning, including research cloning (otherwise known as nuclear transfer), which scientists say is necessary to realize the promise of the research. Castle agrees, predicting that nuclear transfer "will at some point probably be essential."

But that battle lies sometime in the future, he says: "I don't think we have to cross that bridge at this moment. ... The moderate cause is advanced one issue at a time."

—C.H.

Immediately after the vote, the White House repeated the president's intention to veto the bill and broadcast his support for H.R. 2520, which encourages the collection of umbilical cord blood stem cells. That measure passed the House earlier in the day with only one dissenting vote.

The next day, Castle and DeGette ceremoniously handed a copy of their bill, topped with a red bow, to senators Arlen Specter (R-PA) and Tom Harkin (D-IA), sponsors of an identical measure (S. 471). "I've never been enthusiastic about a press conference," says Castle, but this one was an exception.

Although the Senate has generally been more supportive than the House toward ES cell research, getting a public vote may be tougher. Specter's and Harkin's bill has been awaiting action since February, and on the day of the House vote they wrote to Frist urging him to schedule a vote on it. Frist's resist-



**Opposing views.** Representative Mike Pence (R-IN), with "snowflake" babies, speaks against the bill. At left is Rep. Dave Weldon (R-FL).

ance, say insiders, is fueled not just by his opposition to human ES cell research but also by his presidential ambitions for 2008.

Specter said that an alternative strategy to winning a direct vote would be attaching it to a spending bill. He predicted that the measure would pass by more than the 2:1 margin needed to override a presidential veto (and,

along the way, stave off a filibuster). Last year 58 of the body's 100 senators sent a letter to the White House asking for a less restricted stem cell policy, he said, and "20 more are in the wings."

Overriding a veto would be a tall order in the House, however. House Rules Committee chair David Dreier (R-CA), who supported H.R. 810, last week suggested that some kind of compromise might be reached to avoid a presidential veto. But Castle says that "it would be very hard to tighten our bill" by narrowing its scope any further.

White says that the groundwork for last week's victory was laid shortly after Bush announced

his policy in 2001 and that supporters now feel the momentum has shifted in their favor. And although Gearhart cautions that the House vote "is very much of a baby step," he is hopeful that an even more decisive Senate vote will make it clear that Bush is out of step with the wishes of the American people.

—CONSTANCE HOLDEN

